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Ruppia anomala sp. nov., an aberrant type of the Potamogetonaceae

C. H. OSTENFELD

(WITH PLATE 32)

Ruppia anomala sp. nov. Habitu fere ut *R. maritimae* subsp. *rostellatae*. Caulis filiformis, ramosissimus; folia filiformia; pedunculus post anthesin brevis nec elongatus, rectus; thecae antherarum subglobosae; pollinis cellulae semilunariter curvatae; carpidia 2–4, oblique ovoidea; stigma peltatum, supra visum subrotundum; carpella fructifera oblique ovoidea, apice breviter et oblique attenuata, a basi concreta divergentia; carpellorum podogyna in unum conjuncta; podogynum commune striis longitudinalibus conjunctionem demonstrantibus constructum, sursum incrassatum.

Praecipue differt ab omnibus *Ruppiis* carpellis fructiferis basi concretis, in apice podogyni communis positis.

PORTO RICO: border of Lake Guanica, March 11 and 12, 1913, *N. L. Britton & J. A. Shafer 1870.*

In December, 1913, I visited the New York Botanical Garden and studied the collections of the so-called "sea-grasses." In the herbarium material I found a strange plant, habitually like a slender *Ruppia*, but with quite different fruits. I pointed out to Dr. N. L. Britton that this plant, which he had himself collected at the border of a lagoon, Lake Guanica, in Porto Rico, was an unknown plant, at least to me. He then asked me to examine it more closely and, if new, to describe it, and after my return from the West Indies I had the material sent to Copenhagen for study.

I thought at first that we had to do with a new genus, but now I consider it better to regard the plant in question as an aberrant species of *Ruppia*.

The morphology of the stem and leaves is the same as in an ordinary slender and tiny *Ruppia maritima* L.* Also the morphology of the *flower* is in all essential points as usual. Each of the two stamens consists of two anther halves (thecae) and a connective with an outgrowth of a conical shape; the thecae are round-ovoid with a slight furrow indicating their two sacs. The pollen grains are of the same bow-shaped form as in *R. maritima* and with the same delicate reticular thickenings of the outer surface (see Graves, *pl. 12*). The female part of the flower consists of two or four pistils of oblique-ovoid form and with a peltate sessile stigma. The ovule and the integuments do not show anything remarkable, and the finer study of the development of the megasporangium was not possible owing to the fact that the material available was all herbarium specimens.

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* See, for example, Graves, A. H. The morphology of *Ruppia maritima*. Transact. Connecticut Acad. **14**: 59–170. *pl. 1–15.* 1908.

The peculiarity of the plant does not show itself before we come to the fruit. The peduncle does not lengthen to any evident degree after the fertilization; it remains short as in the subsp. *rostellata* (Koch) Asch. & Graebn. of *R. maritima*. The main point of distinction between our new species and the others is the development of the stipe of the fruit. In *R. maritima* and other species each sessile pistil after fertilization grows out to a stipitate fruit, thus forming four free and distinct drupelets which are long-stalked in most species, but short-stalked in the var. *brevirostris* Agardh of *R. maritima*. In our new species the stipes of the drupelets are united into one common stipe (a podogynium), upon which four longitudinal furrows show the lines of concrescence. At the top of the podogynium the drupelets are placed in a star-like manner; their form does not show any essential difference from that of the drupelets in *R. maritima*. The length of the podogynium varies much, sometimes it is very short, not reaching that of the drupelet, sometimes it is nearly twice as long; but it does not reach such dimensions as the stipes of the free drupelets in *R. maritima*.

Very often only one or two pistils are fertilized, and we then find the abortive pistils as small warts at the top of the podogynium. The concrescence of the stipes goes on in spite of the abortion of some of the pistils; but the podogynium seems to remain shorter in the cases where only one drupelet has been developed.

I have had plenty material at hand, and the development of the fruit has been the same in all specimens seen. Otherwise I would have considered it as a teratological abnormity; now I must regard it as the normal state of this plant. It places the species in a very remote place in the genus, and even in the whole family of *Potomogetonaceae*, of which one of the main characters is the distinct and free carpels.

As I have not collected the plant myself, I do not know if the conditions of life are in any regard peculiar; it may be that a closer study of the plant in its natural environment will elucidate the mystery which always seems to lie behind such a case where a plant being like a common species in most respects differs in one essential point. This new species of *Ruppia* has an analogue in the famous *Capsella Heegeri* Solms,* which only differs from the common *Capsella Bursa-pastoris* L. in the shape of the fruit, a character which would remove it from the genus *Capsella* and from the group of genera to which *Capsella* belongs, if purely formal reasoning was used.

It is possible that *Ruppia anomala* has sprung from *R. maritima* in a similar manner to that supposed to have been the case when *Capsella Heegeri* was found on the drill-ground at Landau in Germany. It is to be hoped that some botanist will be able to visit Lake Guanica and study the *Ruppia* in a more thorough manner than I have been able to do. Perhaps he will clear up the matter; at present we have only to consider it a new and aberrant species.

NOTES

After the manuscript of this article was sent to America for publication, Dr. N. L. Britton informed me that he had visited Lake Guanica again this year and had collected a *Ruppia* which he was sending me for examination. When this material arrived it was at once evident that we had to do with the widespread *Ruppia maritima*. The specimens were in flower and fruit and showed elongated, partly coiled peduncles and *free* and long-stipitate drupelets, i.e., they were quite typical *R. maritima*, none exhibiting the peculiar characteristics of the plant described above. As to the collecting place Dr. Britton said, "the *Ruppia* came from the same shore of Lake Guanica that the other aquatic plant was obtained from. I cannot say that it was at exactly the same spot, but it must have been within one or two hundred meters." This is a very interesting observation, and it makes the present case still more parallel to that of the finding of *Capsella Heegeri*. The new form has evidently sprung from the true *R. maritima* at the spot. I will repeat the wish expressed above as to a thorough study of the plant *in situ* and only regret that an experimental study of a plant of this kind would involve considerable difficulty.

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* Solms-Laubach, H. Graf zu. Cruciferenstudien I. *Capsella Heegeri* Solms, eine enu entstandene Form der deutschen Flora. Bot. Zeit. **28**: 167. 1900.

In a paper on the postglacial plant-remnants of the moors of Norway, Jens Holmboe* has mentioned (p. 149) and figured (*pl. 2, f. 19*) an anomalous fruit of *R. maritima* in which the two fruitlets were united at their base and supported by one very long common podogynium, thus a case much resembling the fruits of the new Porto Rican species. He says that he found only one fruit of that kind amongst several thousand normal fruits. I owe this reference to Mr. Knud Jessen of Copenhagen.

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Explanation of plate 32

RUPPIA ANOMALA Ostenfeld

FIG. 1. Part of a plant showing the fruiting stalk. The upper fruit has three well-developed drupelets and a long podogynium, the lower only one well-developed drupelet and a short podogynium. × 2.

FIG. 2. Spike before flowering, showing 2 stamens and 2 pistils in each flower bud (microscope system, Winkel, Ob. 4, Oc. 1).

FIG. 3. Another flower bud from the side (Ob. 4, Oc. 1).

FIG. 4. A pistil showing the position of the egg and its integuments (Ob. 3, Oc. 1).

FIG. 5. A flower after flowering; none of the pistils has been fertilized and no growth has taken place (Ob. 1, Oc. 1).

FIG. 6. A fruit of which one drupelet has developed, the three remaining unfertilized appearing as warts (Ob. 1, Oc. 1).

FIG. 7. Pollen grains (Ob. 6, Oc. 1).

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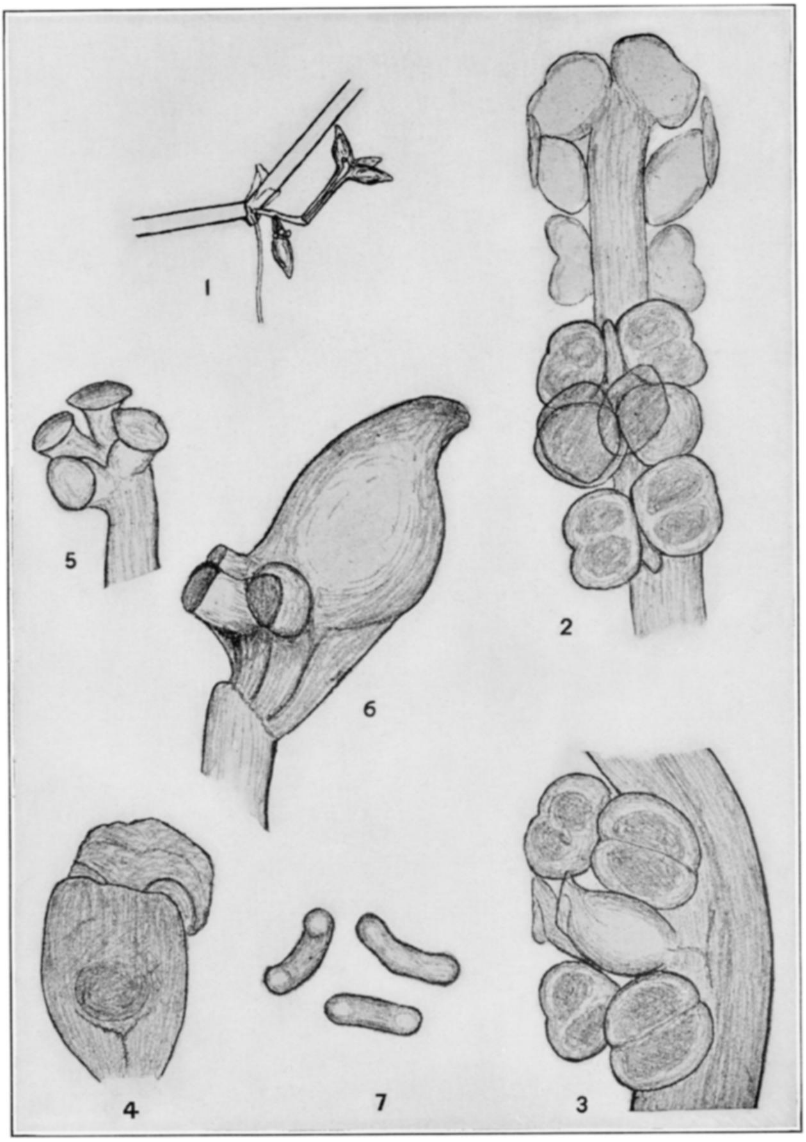
* Planterester i Norske torvmyrer. Kgl. Norske Vidensk. Selsk. Skr. I. No. 2. 1903.



RUPPIA ANOMALA OSTENFELD